

WE CLAIM:

1. A device comprising:
 - an emitter electrode;
 - a resistor layer;
 - 5 a patterned electrically conductive seed layer overlying part of the resistor layer;
 - a dielectric layer overlying the resistive layer;
 - 10 a gate electrode overlying the dielectric layer above the resistive layer and having lateral edges in approximate vertical alignment with lateral edges of the dielectric layer; and
 - 15 a carbon based electron-emissive element (a) positioned over the seed layer above the emitter electrode and (b) situated in a composite opening extending through the gate electrode and the dielectric layer.
- 20 2. A device comprising:
 - a group of laterally separated emitter electrodes;
 - an electrically resistive layer overlying parts of the emitter electrodes;
 - 25 a dielectric layer overlying the resistive layer;
 - a plurality of laterally separated gate electrodes overlying the dielectric layer above the resistive layer; and
 - 30 a multiplicity of electron-emissive elements (a) positioned over a patterned seed layer above the emitter electrodes and (b) situated in composite openings extending through the gate electrodes and the dielectric layer.
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3. A device as in Claim 2 wherein the dielectric layer comprises a dual layer of silicon nitride and silicon dioxide.

5 4. A device as in Claim 3 wherein the dielectric layer comprises a single layer of silicon nitride.

10 5. A device as in Claim 3, wherein the dielectric layer comprises a single layer of silicon dioxide.

15 6. A device as in Claim 2 wherein the multiplicity of electron-emissive-elements comprise carbon.

7. A device as in Claim 6 wherein the multiplicity of electron-emissive-elements are filaments.

20 8. A device as in Claim 7 wherein the patterned layer comprises a plurality of laterally separated seed strips, each extending laterally over the resistor layer.

25 9. A device as in Claim 8 wherein a different one of said plurality of laterally separated seed strips underlies a group of said electron-emissive elements.

30 10. A device as in Claim 9 wherein said group of electron-emissive elements defines a pixel.

35 11. A device as in Claim 10 wherein the electron-emissive elements are allocated into a

number of laterally separated sets, each comprising multiple electron-emissive elements; at least one of the set overlying each conductive strip.

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12. A carbon based emitter fabrication method comprising:

furnishing and initial structure in which
10 (a) an emitter electrode overlies a glass
substrate, (b) a gate electrode overlies a
dielectric layer that overlies a resistor layer
and (c) a group of electron-emissive elements
is disposed on a seed layer in a composite
15 opening extending through the gate electrode
and the dielectric layer; and

20 patterning the seed layer to form a plurality strips, each one of said plurality of strips underlying a set of the electron-emissive elements.

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